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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/693,614	10/20/2000	Dieter Mueller	81208-246308	8876

7590

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EXAMINER

LEE, HWA S

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/693,614

Applicant(s)

MUELLER ET AL.

Examiner

Andrew H. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 11/12/02 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. A copy of "Diffractive grazing-incidence interferometer" by de Groot is missing.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation "said first diffraction grating" in the last clause. Claim 8 recites the limitation "said first diffraction grating". Claims 4 and 7 recite the limitation "said diffraction grating." There is insufficient antecedent basis for this limitation in the claim.

### *Specification*

4. The disclosure is objected to because of the following informalities: There is a duplicate of claim numbering of claims 16 and 17. For examination purposes misnumbered claims 16-37 are interpreted to be renumbered 18-39 and the claim dependency to depend on the claim numbers as is.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Groot (6,249,351).

deGroot shows a grazing incidence interferometer, for example Figure 7, comprising:

- a low coherence light energy generating device (701);
- a collimator (703, 706);
- a diffraction grating (705);
- a reflective surface (730, 731);
- a second diffraction grating (770);
- a collimator (771, 773);
- a camera (775)
- a specimen surface having a predetermined standardized characteristics.

7. de Groot does not expressly say that the light energy passes only over a portion comprising less than half the specimen surface. At the time of the invention, one of ordinary skill in the art would have illuminated a portion that is less than half of the specimen surface. The skilled artisan would have done so for specimens that are large compared to the projection size of the light energy since smaller and cheaper diffraction gratings, lens and cameras can be used. In addition, it can be interpreted that the top portion of the sample surface is only a small portion of the top, side, and bottom surface which would meet the claim limitation of less than

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half the specimen surface.. Furthermore, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

As for claim 2, 3, 7, 17, 28, 30, please see Figure 7, where the reflective surface and specimen receive nonzero order light.

As for claims 4, 8, 18, 32, 35, please see column 5, lines 6+ and column 4, line 44.

As for claims 5, please see camera (175 or 475) and column 9, lines 53+.

As for claim 6, the receiving collimator comprises at least one lens.

As for claims 9, 10, 11, 15, 21,22, 24, 37, and 39, it is well known in the art to translate either the sample or the measuring apparatus for surface scanning the sample for global planarization and dishing.

As for claim 12, , at the time of the invention, one of ordinary skill in the art would have tested unpatterned wafer with film as suggested by de Groot.

As for claim 13, 23, and 38, at the time of the invention, on of ordinary skill in the art would be motivated to have the measuring apparatus incorporated in any system including a CMP processed wafer production line where surface profile measurements are desired and it is well known in the art that surface profiles of wafers during production is desired as shown by de Groot.

As for claim 19, Official Notice is taken that initial calibrating of interferometers (are/is) old and well known in the art. See *In Re Malcolm* 1942 C.D.589: 543 O.G.440. At the time of the invention, one of ordinary skill in the art would have calibrated the measuring interferometer

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in order to obtain accurate, consistent, and repeatable measurements caused by imperfect optical components of the interferometer or temperature fluctuations.

As for claim **20 and 33**, please see column 4, lines 60+.

As for claim **29 and 34**, please see collimator 103.

As for claim **31**, please see elements 170, 171, 173.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9318 for regular communications and 703-872-9319 for After Final communications


If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

- a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and
- b) Should be unsigned by the attorney or agent.


This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (703) 305-0538. The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.



Andrew Lee  
Patent Examiner  
Art Unit 2877  
April 10, 2003/ahl



Frank Font  
Supervisory Patent Examiner  
Art Unit 2877